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April 1993



April 1993

# PROGRESS

## Burlington Northern Railroad/Livingston Environmental Cleanup



By Montana Department of Health and Environmental Sciences

### *What's happening at the site*

Two of the most critical documents concerning the Burlington Northern/Livingston Environmental Cleanup site have recently been released for public review and comment. The Montana Department of Health and Environmental Sciences (MDHES) has released the Draft Remedial Investigation Report by BN and the Draft Human Health and Ecological Risk Assessment by MDHES.

The final remedial investigation report is due to MDHES from BN by April 15. The risk assessment by MDHES is also due April 15. MDHES plans to hold a public meeting in May to discuss the results of both reports as well as the basement gas study results.

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### *What are the draft risk assessment conclusions?*

The draft risk assessment developed for the Livingston Rail Yard site concludes that:

- Greatest risks are associated with volatile compounds found in groundwater. These volatile compounds include solvents used at the rail yard for cleaning machinery and other chemicals formed when these solvents break down in the environment.
- Unacceptable exposure to these compounds could occur if people ingested groundwater from contaminated wells and/or used such contaminated groundwater for bathing and cooking. Exposures due to consumption of vegetables irrigated with contaminated groundwater is expected to be minimal due to the volatile nature of the contaminants. However, MDHES is still evaluating the potential impact of such exposures.
- No current risk associated with contaminated groundwater is believed to exist, since no contaminated wells have been identified which are used for domestic purposes. Thus, risks due to exposure to contaminants in groundwater should be considered potential or hypothetical.

- Smaller risks may be associated with contaminant vapors which have migrated from groundwater, through soil, and into basements and other closed indoor areas. Since several homes have been shown to currently have measurably elevated levels of some groundwater contaminants, MDHES is continuing its evaluation of this exposure pathway.
- Children and adults who trespass on the Livingston Rail Yard property, or use adjacent areas for play or recreation, are not expected to receive unacceptable exposures to contaminants found in surface soils. Exposure and risk estimates for these individuals appear to be below levels which might require clean-up.
- Present workers at the Livingston Rail Yard are also not expected to receive excessive exposures from contaminants in surface soil. However, MDHES is still evaluating potential intermittent exposures to workers engaged in excavation activities. Such activities could put workers in contact with more highly contaminated soils for short periods of time.

Cont. on page 2

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## Risk Assessment conclusions

~ Continued ~

- Current data suggest little site-related contamination has migrated off site and into the slough or creek areas or into the Yellowstone River. In the past, elevated levels of 2-chlorotoluene

have been found in sediments in the Yellowstone River. However, these sediments have been removed, and subsequent sampling has not shown any contamination. Impacts of the site on local ecological communities, including those of the Yellowstone River, are expected to be minimal or negligible.

## Potential contaminant health effects

Following are summaries of the potential health effects of the contaminants most commonly found at the BN/Livingston site:

### Chlorinated solvents:

Chlorinated solvents detected at the rail yard are a subgroup of a class of chemicals known as volatile organic compounds, characterized by high vapor pressures and a high potential to evaporate or vaporize. Chlorinated compounds found at the BN/Livingston site were primarily used for cleaning locomotive traction motors. They are also found in numerous consumer and industrial cleaning products (stain removers, fabric cleaners) and used for drycleaning textiles. Due to their widespread industrial use, chlorinated solvents are common environmental contaminants. Chronic exposure to these solvents

may cause central nervous system and liver and kidney dysfunctions. Inhaled vapor-phase solvents are mostly excreted unchanged in the breath, although some absorption in the body does occur. Chlorinated solvents do not bioaccumulate in the food chain but are metabolized in the liver and excreted.

### Polynuclear Aromatic Hydrocarbons (PAHs):

Limited information is available on PAHs. Because they are fat-soluble, PAHs are easily absorbed into the body through the lungs, skin and digestive tract. Once absorbed, these compounds migrate to all tissues but are particularly concentrated in those tissues with high fat content. Exposure to large amounts of PAHs in a short time may result in sun sensitivity, skin reddening, itching and burning. Some PAHs are potential carcinogens (cancer-causers).

## What is a risk assessment?

The risk assessment uses chemical information from site studies, exposure potential, and toxicity information to characterize potential human health and ecological risks due to site contamination. The Human Health Risk Assessment section is written as if there were to be no future cleanup of the site. It estimates current and potential future exposure and risk. A separate Ecological Risk Assessment section assesses only present risk conditions, not future risks, to plant and animal species. The risk assessment will help MDHES develop site-specific cleanup levels which are protective of human health and the environment.

### What is a risk assessment?

MDHES used information from Livingston site studies to estimate if and to what degree the public and the environment are exposed to site contamination. This information, collected during the remedial investigation process, is used to identify potential chemicals of concern (COCs). Climatic, demographic and land use surveys are used to identify potential exposure pathways and risk scenarios. The site-specific exposure assessment is combined with chemical toxicity information to

fully characterize potential current and future site-related risk.

The purpose of the environmental risk assessment is to identify risks to local plants and animals under present conditions. In addition to ground water, surface water, sediment and surface soil, MDHES also assessed the potential for contamination of plants and animals. Risk estimates are based on toxicity values that are intended to protect sensitive local species.

### How is a human health risk assessment conducted?

#### 1) Identify contaminants of concern (COCs):

The first step in the risk assessment is to determine COCs to be considered for evaluation. MDHES selected COCs based on human health effects, human nutritional needs, frequency of detection, naturally occurring concentrations, and association with site activities. COCs for indoor household air, which may be linked to contaminants volatilizing from groundwater and rising through the soil, also include chlorinated solvents and vinyl chloride. The risk assessment focuses on these chemicals to determine risks posed at the site.

MDHES found only one COC for Yellowstone River





sediments — 2-chlorotoluene. No COCs were identified for surface water (i.e., chemicals detected in river samples are below risk-based allowable concentrations).

#### 2) Assess human exposure to contamination:

The second step in the risk assessment is the exposure assessment which estimates how people may come in contact with site-related contaminants. The exposure assessment also considers pathways of exposure including dermal (skin) contact and ingestion of contaminated ground/surface water, soil, and river sediments, and inhalation of contaminants in indoor and outdoor air. Populations likely to experience the greatest exposures to chemicals from the site include rail yard workers and residents of Livingston living within the contaminated area. Cumulative exposures, in which separate exposure scenarios are combined, are also discussed in the assessment.

#### 3) Assess toxicity of the contaminants:

A toxicity assessment is the third step in the risk assessment, which determines the potential for each COC to cause adverse effects in individuals, and also determines the relationship between the extent of exposure to a contaminant and its adverse health effects. Toxicity profiles are used to outline major adverse health effects and describe absorption, distribution, metabolism, and excretion of the contaminant from the body. Toxicity values for carcinogenic (cancer-causing) contaminants are established assuming that a certain dose of the contaminant, no matter how small, is associated with some cancer risk. Toxicity values for noncarcinogens are expressed as threshold reference doses, below which adverse health effects are not expected in even the most sensitive populations.

#### 4) Determine the risk to the public:

Risk characterization is the final step of the risk assessment. MDHES arrives at numerical health risks by combining toxicity values and chemical exposure estimates. Numerical values are assigned to individual and total carcinogenic and noncarcinogenic risks, and MDHES uses these values to establish realistic cleanup levels that are permanently protective of human health and the environment.

Problems associated with these steps in the risk assessment include uncertainties in the database of sample analyses, uncertainties in exposure assumptions for site workers, and uncertainties in deriving toxicity criteria (i.e., extrapolation of laboratory animal studies to human scenarios). Calculated exposures for residential scenarios may vary by a factor of 10. Because detailed information about railroad employees' daily work activities is unknown, health risks to on-site workers may be overestimated due to conservative exposure assumptions. Exposure assumptions for recreational visitors and site trespassers may also be overestimated. Nonetheless, MDHES is confident cleanup levels based on the risk assessment will be protective for nearby residents, on-site workers and recreational visitors.

#### How was the ecological risk assessment conducted?

The Ecological Risk Assessment complements the Human Health Risk Assessment. It evaluates potential adverse effects of contaminated water, soil, and river sediment on plant and animal species residing on or near the rail yard. It includes commonly found populations, communities, and ecosystems, as well as rare, threatened, and endangered species. It also evaluates changes in nutrient and energy flow, and changes in life form structure and composition, which may be influenced by chemical contamination.

Like the human health risk assessment, an ecological risk assessment follows a set format. The "ecological description" includes major plant and animal species that are known or may be expected to inhabit the site. COCs are selected based on frequency of detection, potential toxicity, or potential to bioaccumulate. The "exposure assessment" evaluates chemical concentrations for each contaminated medium. The "hazard assessment" evaluates the amounts of COCs which definitely or potentially will result in adverse effects to species of concern. In the final risk characterization, potential impacts to food chains are assessed.

## *Remedial Investigation report turned in*

The Draft Remedial Investigation (RI) report is a comprehensive summary of investigative activities. The purpose of the remedial investigation is to determine the nature and extent of water, soil, and air contamination at the site. BN submitted its first draft of the RI report in September 1991 for public review. All investigative activities conducted since then are added to this current Draft Final RI report. Additional investigative work will include sludge definition and removal from the cinder pile, soil investigations east of the Yellowstone River, and the Phase IV Indoor Air Quality (Basement Gas)

Investigation. Results of these studies will be included in the final RI report which is expected to be approved by MDHES in April.

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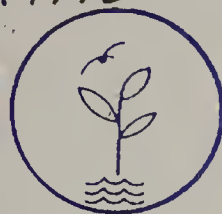
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# PROGRESS

## Burlington Northern Railroad/Livingston Environmental Cleanup



By Montana Department of Health and Environmental Sciences

### *What's happening at the site*

During September and October remedial investigation and feasibility study (RI/FS) activities continued at the Burlington Northern/Livingston Environmental Cleanup site, including removal of sludge and groundwater cleanup.

#### Indoor air quality (basement gas) study

At an October 14 public meeting in Livingston, the Montana Department of Health and Environmental Sciences (MDHES) discussed additional sampling for the indoor air quality (basement gas) study. In November and December, BN will collect indoor air samples from homes within the established study area on Livingston's east side. The objective of the study is to determine the extent of homes impacted by solvent vapors emanating from contaminated groundwater. In addition, MDHES is installing test ventilation systems in three homes. Sampling before and after ventilation will help MDHES determine whether solvent vapors can effectively be removed from indoor air.

#### Risk assessment

MDHES contractor, Camp Dresser and McKee (CDM), completed the Draft Health Risk Assessment in October. The purpose of the risk assessment is to determine the potential risk to public health and the environment presented by site contaminants. It is a toxicological evaluation of risks associated with contaminated air, soil, and groundwater on- and off-site.

MDHES held a public meeting in Livingston October 14 to discuss preliminary results of the risk assessment. MDHES is currently reviewing it and will soon place it in the public site document repositories listed on page 2 of this progress report.

#### Pancreatic cancer study finalized

The final pancreatic cancer study conducted by the Agency for Toxic Substances and Disease Registry (ATSDR) in Atlanta and put in draft form in October 1991 has been released. The findings in this final report are the same as those contained in the 1991 draft. ATSDR is recommending a

follow-up study, and MDHES is requesting that ATSDR do the follow-up. ATSDR recommends a "more rigorous epidemiologic investigation" to investigate further the association between pancreatic cancer and environmental factors in Livingston. The follow-up study should "collect and analyze more complete information regarding medical history, residential and occupational history and other known pancreatic cancer risk factors, such as smoking. ATSDR also recommends involving the Livingston community in the study.

The results of the draft study showed an increase in the disease in white males in Livingston from 1980 to 1989, but ATSDR has not yet determined the cause of the increase. However, based on information obtained in the first phase of the study, age and smoking do not appear to explain the increase. Copies of the final study are available to the public at the site repositories listed on page 2 of this progress report.

#### Source removal activities progress

A first logical step in addressing site contamination is removing the sources of contamination. Soil vapor extraction systems on the rail yard continue to remove solvents from soil, thereby reducing their contribution to groundwater contamination. Soil vapor extraction systems are operating at the electric shop, locomotive shop, and waste water treatment plant grit chambers. Solvents are removed from the soil by an air stream and piped through activated charcoal filters before being discharged to the atmosphere. Since February 1992, these systems have removed an estimated 2,700 pounds of solvents, which includes 1,850 pounds of chlorinated solvents. The remaining 850 pounds of contaminants are associated with diesel fuel.

Sludge removal from the buried oil-water separator overflow pond was completed October 14. Also completed was sludge removal at the in-line grit chamber, cinder pile lagoon, waste water treatment plant sump, API separator pond and the overflow pond. Since June, a total of 7,700 tons of sludge have been excavated and sent to a permitted industrial waste landfill.





## PROGRESS

in Utah. This winter, MDHES will work with BN to determine how to locate and excavate remaining sludge in the cinder pile.

### Ambient air monitoring terminated

MDHES gave approval to Burlington Northern Railroad/Envirocon in September to stop sampling ambient air. Ambient air is the air found outdoors in the area of the rail yard. Ambient air sampling during the past two years has determined that polynuclear aromatic hydrocarbons and particulates are well below the Montana ambient air quality standards. The Final Ambient Air Monitoring Report will be submitted to MDHES in December 1992.

### Feasibility study status

As part of the feasibility study under MDHES oversight, BN is investigating if and how chlorinated solvents and diesel fuel in the soil leach (seep) into the groundwater. In a laboratory BN has placed solvent-contaminated soil in large tubes. Water is run through the soil tubes to simulate the environment at the rail yard. Results of these tests will be discussed in the Primary Hydrocarbon Feasibility Study Report soon to be submitted to MDHES.

Three-dimensional groundwater flow and transport

models are also being developed to assist in selecting potential cleanup alternatives for groundwater.

### Waste water treatment

In August, BN/Envirocon treated 42,000 gallons of waste water at the Livingston Rebuild Center waste water treatment plant. This water was generated from groundwater sampling, well construction, and equipment decontamination activities. The water was discharged to the Yellowstone River in accordance with their discharge permit. Waste water from cleanup activities will continue to be treated when necessary.

### Misc.

Remaining field activities for 1992 include soil sampling in the transfer pit and east of the Yellowstone River to investigate potential additional volatile organic compound source areas.

The Draft Final Remedial Investigation Report, which includes all data collected from soil, water, and air investigations throughout the site, was submitted to MDHES for review and approval November 12. The report will be released for public comment in December.

## What's new at the library

MDHES has placed the following documents in the site document repositories during the past month. Site documents are available to the public at the following locations: Livingston Public Library, MSU Library in Bozeman, State Library in Helena, and the MDHES Superfund program office in Helena.

*Second Indoor Air Work Plan for Livingston Rail Yard, by Envirocon:* This report outlines activities to be conducted for the second round of sampling of Livingston basements in two defined areas in east Livingston.

*Third Quarter Status Report, by Envirocon:* This report summarizes site work conducted by BN's consulting firm, Envirocon, at the Livingston site.

*Final Report Investigation of a Cluster of Pancreatic Cancer Deaths, Livingston and Park County, Montana, by Agency for Toxic Substances and Disease Registry, Sept. 1992.* (Please refer to first section of this progress report.)

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## Burlington Northern Railroad/Livingston Environmental Cleanup



By the Montana Department of Health and Environmental Sciences

### *What's happening at the site*

#### **Basement gas investigation**

In February and March 1992, under direction of the Montana Department of Health and Environmental Sciences (MDHES), Burlington Northern (BN) sampled basement gas in Livingston to determine whether solvent vapors, migrating from the site through soils and groundwater, had affected indoor air quality in residences located above the contaminated groundwater plume. BN's report, *Livingston Rail Yard Indoor Air Quality Investigation Report* summarizes the results of the investigation.

MDHES reviewed the information and evaluated the public health risks associated with the findings of BN's study. The MDHES evaluation of risk is summarized in the *Revised Preliminary Assessment of the Livingston Rail Yard Indoor Air Quality Investigation Report*. MDHES determined that low concentrations of solvent vapors detected in some of the homes may present adverse long-term health threats for residents occupying affected homes. For this reason, MDHES and BN will install test systems in two Livingston homes to determine if ventilation adequately reduces indoor air contaminant levels. MDHES will oversee additional sampling this fall to evaluate the effectiveness of the ventilation systems and to determine if other homes are impacted by these solvents. Both reports concerning basement gas can be found at the Livingston Public Library and the MSU Library in Bozeman.

#### **Sludge removal**

Burlington Northern Railroad continues to remove the estimated 5,000 tons of wastewater-generated sludge from pits throughout the rail yard. Nearly 4,500 tons (170 semi-truck loads) of sludge have been excavated from the cinder pile, wastewater treatment plant compound, and the oil separator ponds. Buried sludge remaining in the overflow pond and cinder pile will be removed during September and October. Trucks are transporting the sludge to the United States Pollution Control, Inc., waste disposal facility in Utah.

#### **Diesel recovery report**

The feasibility study for diesel fuel recovery will be submitted to MDHES this fall. BN tested several methods for removal of diesel fuel from groundwater. The area of contamination currently extends from D Street to L Street underneath the railroad tracks. The estimated 300,000 to 600,000 gallons of diesel floating on top of the groundwater is relatively immobile because it tends to stick to soil.

The report will outline BN's preferred approach for addressing cleanup of the diesel plume. MDHES will review the report, and may suggest other options to be considered for remedial alternatives. The report will be available for public review and comment.

~Continued on page 2~

## What's happening, continued from page

### Soil vapor extraction

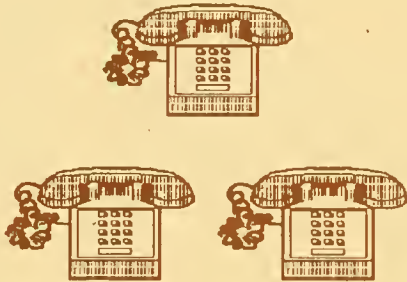
Soil vapor extraction is a process by which air is pumped through contaminated soils to vaporize contaminants, thereby reducing potential groundwater contamination. Six of these systems have been operating at solvent-contaminated areas throughout the rail yard this summer. Each system is equipped with two activated carbon filters to trap contaminants before they are discharged to the atmosphere.

An estimated 2,500 pounds of solvent contaminants have been removed from soil since soil vapor extraction began in March. This includes approximately 1,500 pounds of chlorinated solvents and 1,000 pounds of organic compounds similar to diesel fuel. These amounts are derived by sampling the air stream flowing into the carbon units. The carbon filters are cleaned and regenerated at a licensed

facility in Washington state. The process will continue intermittently through this fall.

### Remedial investigation/feasibility study

BN submitted the Phase I Remedial Investigation Report in September 1991. MDHES reviewed the document and identified numerous issues requiring further investigation. Throughout the past year, BN has conducted additional studies (Phase II remedial investigation) to identify contamination in soils, groundwater, outdoor and indoor air, and subsurface soils at potential source areas. Information gained from these studies will be presented in the draft remedial investigation report. BN will submit the report to MDHES in October and a 30-day public comment period will follow.



**If you have questions or concerns about the Livingston site, call MDHES staff members John Wadhams in Helena at 1-800-648-8465 or Joe Michaletz in Livingston at 222-6120 extension 277.**

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## Burlington Northern Railroad/Livingston Environmental Cleanup



By Montana Department of Health and Environmental Sciences

### *What's happening at the site*

#### Indoor air quality investigation of basement gas

MDHES recently received the Preliminary Assessment of the Livingston Railyard Indoor Air Quality (basement gas) Investigation Report prepared by Camp Dresser and McKee (CDM), MDHES' health risk assessment contractor. Burlington Northern performed the indoor air investigation and determined that volatile organic compounds have impacted the air quality in homes above and adjacent to the contaminated groundwater plume. These contaminant gases originate at the rail yard and have spread via groundwater and soil gas to areas of Livingston underneath private homes.

MDHES will work with BN to determine a method to eliminate gases in homes with unacceptable levels.

#### Soil vapor extraction

Soil vapor extraction is a method used to remove solvent vapors from soil beneath the site, thereby reducing their contribution to groundwater contamination. Burlington Northern's March 1992 Monthly Soil Vapor Extraction Report indicates that 1,174 pounds of total volatile organic compounds have been recovered at various source locations through the end of March. This total includes 818 pounds of chlorinated solvents and 356 pounds of other non-chlorinated compounds associated with diesel fuel.

By volume, this indicates that approximately 90 gallons of contaminants has been recovered from subsurface soils. Discharge from the systems to the outside air is monitored every other day. BN takes samples every two weeks to measure the amount of solvents removed, and to ensure the contaminants are being trapped within activated carbon units before the resulting air is discharged to the Livingston atmosphere. Soil vapor extraction will continue intermittently throughout the summer.

#### Subsurface soils investigation

BN completed a round of test pit excavations and subsurface soil sampling at six areas considered to be possible solvent-contamination sources. These areas were investigated

further, based on previous sample results that indicated solvent contamination exists in groundwater beneath each area. MDHES oversaw the additional sampling, the results of which should sufficiently define the nature, extent, and volume of contaminated soil. BN also collected a hardened sludge sample from the waste oil recycling plant disposal area in the center of the rail yard.

Based on laboratory results of this investigation, additional soil gas characterization may be necessary to delineate solvent contamination beneath the shop complex. MDHES will consider the use of soil vapor extraction to remove solvents from soils at the newly identified contaminant areas.

#### Site-wide surficial soils sampling program

BN completed a round of surficial soil sampling at the railyard to identify areas of potential contamination where people may be directly exposed to contaminated soil. The railroad's consultant collected approximately 65 samples from random and selected locations throughout the site and at "background" locations. "Background" locations are off-site areas believed to have no contamination related to the railyard and are used as a comparison to the contaminated locations.

Thirteen separate sampling zones were identified based on worker activity patterns and anticipated surficial soil contamination. Samples were collected from each area to adequately characterize the surface contamination. Laboratory results of surficial soil contamination will be used to calculate potential risks for Livingston railyard workers and others who may frequently come into direct contact with surface soils at the railyard. Human skin exposure to contaminated soils is an important potential exposure route which MDHES will evaluate.

#### Sludge removal

BN has begun removing approximately 5,000 tons of sludge. It will be disposed of in a permitted industrial waste facility at the United States Pollution Control, Inc. (USPCI)

*Cont. on page 2*

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Grassy Mountain Facility located 85 miles west of Salt Lake City, Utah. The sludges resulted from past wastewater treatment activities at the rail yard and have contributed to groundwater contamination throughout the site.

MDHES held a public meeting June 2 to discuss the Sludge Removal Work Plan with local officials and interested individuals. The sludge will be removed from four areas at the railyard. The sludge which is somewhat liquid will be mixed with kiln dust from a nearby cement plant to make it more solid and less likely to leak from the trucks hauling it to Utah. During sludge removal, BN will be required to monitor the surrounding

air to ensure the safety of the public as well as the removal workers. Sludge removal is anticipated to be complete by September 1992.

### For more information

Members of the public who want more information about the BN/Livingston site are encouraged to call MDHES site project manager John Wadhams toll-free in Helena through the Superfund/CECRA hotline 8 a.m. to 5 p.m. weekdays -- 1-800-648-8465.

## What's new at the library

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*Final Surficial Soil Sampling Work Plan*, by Envirocon, Inc., April 1992. Outlines a plan to collect and analyze surface soils.

*First Quarter 1992 Status Report*, by Envirocon, Inc. Describes correspondence between MDHES and Envirocon, Inc. and site activities for first quarter 1992.

*Response to Draft Remedial Investigation (RI) Report Comments*, Envirocon, Inc. - Envirocon's response to MDHES comments.

*First Quarter 1992 Ground Water Sampling Results*, by Envirocon, May 20, 1992. Reports results of groundwater sampling conducted by BN from January through March 1992.

*First Quarter 1992 Ambient Air Monitoring Report*, by Envirocon, May 1992. Reports results of air monitoring conducted by BN from January through March 1992.

*March 1992 Monthly Soil Vapor Extraction Report*, by Envirocon, May 1992. Summarizes soil vapor extraction activities at the railyard during March.

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May 1992



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## Burlington Northern Railroad/Livingston Environmental Cleanup



By Montana Department of Health and Environmental Sciences

### *Basement gas findings*

MDHES and the U.S. Agency for Toxic Substances and Disease Registry met with the public April 16 to present findings of the investigation of indoor air quality/basement gas report. The purpose of the investigation was to determine whether contaminants in the form of volatile organic compounds, migrating from the site via contaminated groundwater and soils, had leaked into homes and affected indoor air quality in residences located above or adjacent to the contaminated groundwater plume. MDHES and BN's consultant conducted the first phase of air sampling in mid-February. In March, MDHES and BN conducted further sampling to include additional homes. Soil gas samples were also taken to assess the relationship between soil gas and indoor air. Outdoor air

samples were collected for comparison purposes.

MDHES and BN collected basement and main floor samples in 15 homes in proximity to the contaminated groundwater area (please refer to map on page 3). Five additional homes were used as background/control sampling points. Low levels of contaminants were detected in homes, and MDHES and its risk assessment consultant, CDM, determined that although levels of contamination did not indicate short-term exposure risks, an unacceptable long-term health concern may exist for some residents. MDHES and CDM are currently reviewing options for further investigation and remediation. MDHES will hold a public meeting to discuss their plans with the public.

### *What's happening at the site*

#### Soil Vapor Extraction (SVE)

The objective of soil vapor extraction is to remove solvent vapors from soil beneath the site, thereby reducing groundwater contamination. MDHES provided oversight for drilling of the soil vapor extraction wells in February. Wells were installed at the locomotive shop manways, the wastewater treatment plant (WWTP) grit chambers, the transfer pit manway and electric shop, and the cinder pile (please refer to map on page 2). SVE wells at the WWTP sump were previously installed during 1990. A three-horsepower motor is used to pump air from the soils through two 1,000-pound activated carbon chambers that remove vapor-phase solvents from the air. Spent or used carbon filters are shipped to a permitted facility in Washington to be regenerated. Periodic sampling of that air ensures that the air being discharged to the atmosphere is free of contamination.

More than 1,000 pounds of contaminants have been removed from contaminated soils. The objective of this interim source control removal action does not preclude complete or

final remediation of the contaminated source areas. Volatile organic compounds and heavy petroleum compounds that remain in the soils will be addressed in feasibility studies and the final remediation plan.

#### Surficial soil sampling

Surficial soil sampling began in April. The investigation will be performed to fulfill the requirements of the site health risk assessment as part of the complete remedial investigation. Surficial soil sampling will focus on areas of potential contamination and areas where people may be directly exposed to contaminated soil.

#### Wastewater treatment

BN treated approximately 48,000 gallons of stored wastewater through Livingston Rebuild Center's (LRC) wastewater treatment plant in early April. This water included all wastewater contained on site from previous well construction

*Cont. on page 2*



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## What's happening (from page 1)

and sampling activities, and water used for equipment decontamination. The wastewater was treated and discharged in accordance with a pollution discharge (MPDES) permit.

### Mission Wye Field Activities

At the Mission Wye site located five miles east of Livingston, MDHES observed installation of four new monitoring wells and groundwater sampling during the last week in March. Previous groundwater samples indicated that contamination from buried sludges at the site has spread off-site. Sludge samples were also collected from the surface.

### Treatment of MRL contaminated soils in East Helena

Montana Rail Link (MRL) plans to transport 4,000 cubic yards of gasoline- and diesel-contaminated soils to a "land farm" near East Helena. Landfarming is a treatment process in which waste deposited in soil is naturally degraded by microbes, volatilized in air and degraded by sunlight. The landfarm is located on MRL right of way property four miles east of East Helena, adjacent to Montana Highway 12.

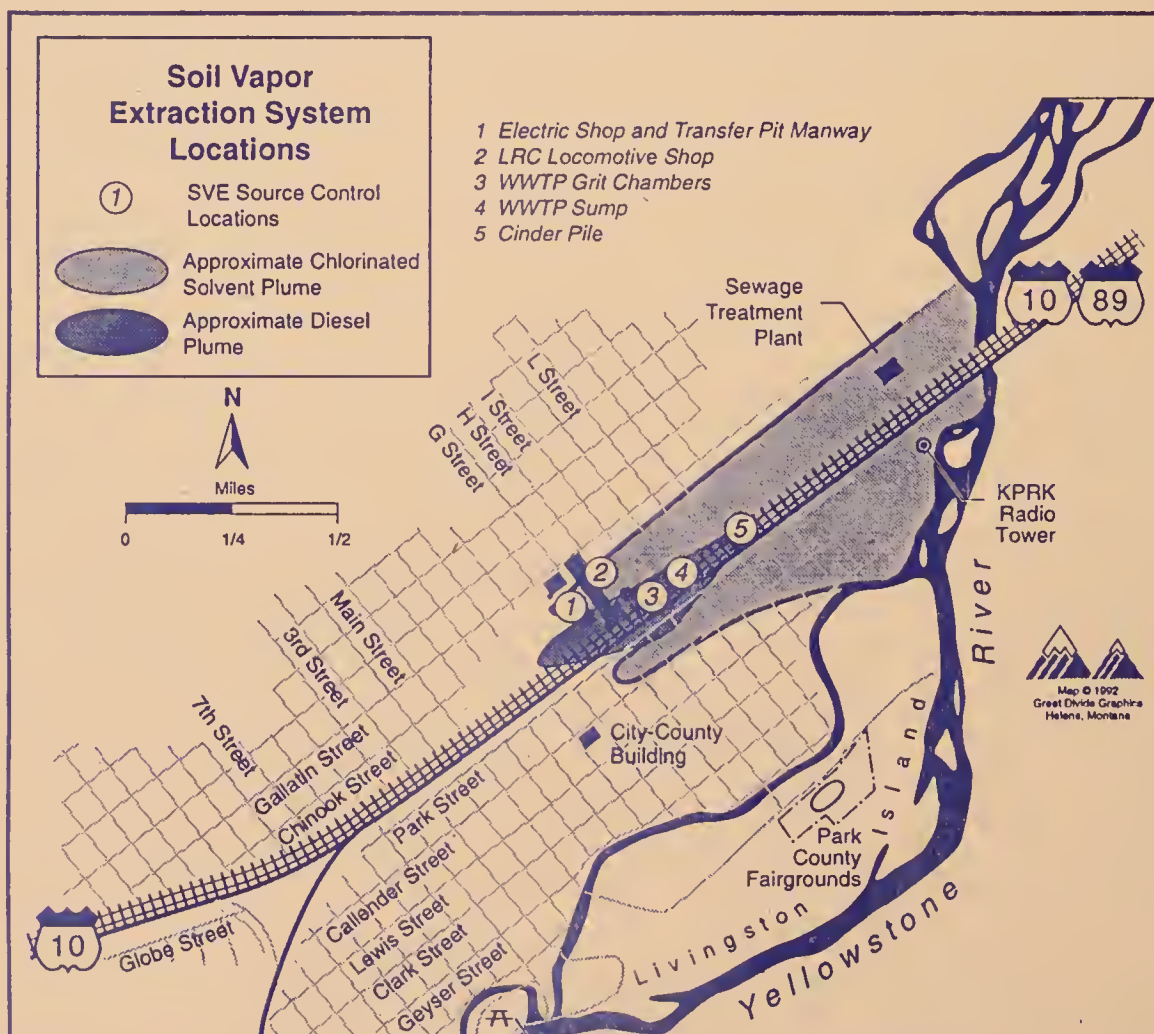
MRL has a permit to treat 4,000 yards of contaminated soil. MRL is currently investigating an option to apply for a permit to increase the volume to 8,000 cubic yards.

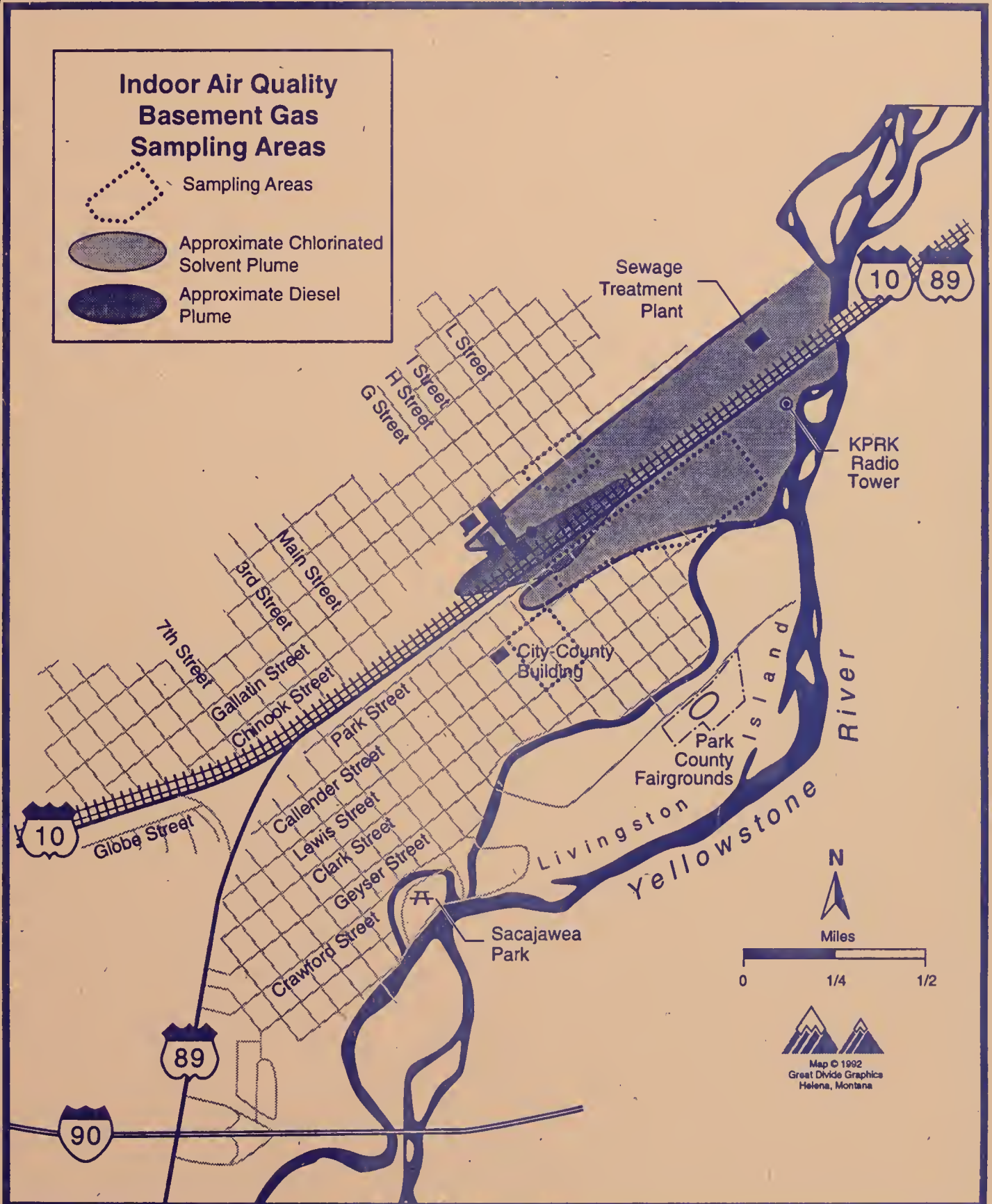
The project is expected to take one year to remediate diesel-contaminated soil and three to four months for gasoline-contaminated soil. MRL may ask to stockpile soil at the landfarm until treatment. The Water Quality Bureau is currently considering this issue.

MRL must treat the soil until contaminant levels reach 100 ppm total petroleum hydrocarbons for diesel-contaminated soil. Ten ppm benzene-toluene-ethylbenzene and xylene (BTEX) and not more than 0.5 ppm benzene are the cleanup levels for gasoline-contaminated soil. For more information, contact Terry Webster, Water Quality Bureau, Helena 444-2406.

### Mission Wye remedial investigation update

In June, BN will submit to MDHES a revised Phase II Remedial Investigation Report summarizing findings at Mission Wye. A public meeting and comment period will follow. BN will continue remedial investigations and feasibility studies this summer to assess the complete nature and extent of contamination associated with the site.







## What's new at the library

MDHES has placed the following documents in site document repositories over the past several months. Site documents are available to the public at the following locations: Livingston Public Library, MSU Library in Bozeman, State Library in Helena, and the MDHES Superfund program office in Helena.

*Third Quarter Ambient Air Monitoring Report*, by Envirocon, October 1991.

*Quarterly Status Report*, by Envirocon, November 1991.

*Fourth Quarterly Ambient Air Monitoring Report*, by Envirocon, November 1991.

*Removal-Action Work Plan for Soils Containing Chlorinated Volatile Organic Compounds, Draft for Public comment*, by Envirocon, December 1991. Outlines the use of soil vapor extraction technology for removing volatile organic compounds from soils at primary sources of contamination.

*Preliminary Screening of Alternatives Report*, by Envirocon, December 1991. Discusses possible future cleanup alternatives for the Livingston Rail Yard.

*Status Report of November and December 1991*, by Envirocon, January 1992.

*Phase II Remedial Investigation Work Plans*, by Envirocon, February 1992. Details field work needed for completion of Remedial Investigation activities

*Removal-Action Work Plan for Soils Containing Chlorinated Volatile Organic Compounds, Final*, by Envirocon, February 1992.

*Preliminary Identification and Description of Applicable Legal Requirements*, by MDHES, April 1992. Identifies state and federal requirements for remedial action at the BN/Livingston site.

*1991 Annual Air Quality Data Summary*, by Envirocon, April 1992.

*Monthly Soil Vapor Extraction Report*, by Envirocon, April 1992. Describes progress of the soil vapor extraction removal action.

*Indoor Air Quality Investigation Report, with appendices*, by Envirocon, March 1992. Describes field work and results of the Indoor Air Quality (Basement Gas) Investigation.

## Are you on our mailing list?

If you wish your name to be added to or deleted from the mailing list for the BN/Livingston site, or if you wish to update your address, please fill out, detach, and mail the following form to Janie Stiles, Montana Department of Health and Environmental Sciences, Cogswell Building, Helena, MT 59620.

Add \_\_\_\_\_ Change \_\_\_\_\_ Delete \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

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